JOURNAL OF THE FRANKLIN INSTITUTE

INDEX TO VOLUME 330

1993

SUBJECT INDEX

Papers are listed under subject headings with first author's name in parentheses. All authors are listed with titles of their papers in alphabetical order in the Author Index.

A

Acoustic cavities (Roumeliotis), 1235
Acoustic eigenfrequencies (Roumeliotis), 1235
Adaptive controls (Jiang), 721
Adaptive equalization (Kumar), 929
Adaptive filtering (Joo), 995
Adequacy of mathematical models (Sarna), 145
Alpha–beta expansion (Kamel), 787
Analytical filter design (Muneyasu), 1087
Approximation theory (Lindquist), 315
Artificial CNN (Wu), 1005

B

Balanced realizations (Fortuna), 695
Bicycle drive system (Han), 1195
Bifurcation (Stensby), 775
Bi-objective optimization (Payne), 1219
Bond graph (Kamel), 787
Bond graphs (Buisson), 1165
Bond graphs (Yen), 1113
Boolean control law (Abadie), 685

C

Cascaded channels (Bell), 1101
Circuit theory (Reza), 423
Circuit theory and design (Bhaskar), 885
Computer-aided design (Zhu), 1051
Computer science and applications (Taiwo), 641
Constrained motion (Udwadia), 571
Constructing nodal bondgraphs (Birkett), 735
Control of discontinuous system (Abadie), 799
Control of discrete two-time-scale systems (Wang), 651
Control theory (Shao), 281
Controller synthesis (Lin), 401
Convergence (Krzyżak), 605
Covariance matrix (Chow), 1
Crack detection (Hu), 841
Cubic symmetry (Muneyasu), 1087

D

DC–DC converters (Wu), 1017
Deadbeat control (Lin), 401
Decoupling (Paraskevopoulos), 1135
Descriptor systems (Ansary), 677
Design of excitation controllers (Papadopoulos), 383
Detection and estimation (Au), 707
Digital filtering (Joo), 995
Digital filters (Brown), 665
Digital redesign for time-delay systems (Tsai), 51
Digital redesign of singular systems (Tsai), 1063
Digital redesign of suboptimal regulators (Tsai), 51
Digital systems (Reza), 423
Discrete memoryless channels (Bell), 1101
Discrete systems (Brown), 665
Discrete-time systems (Lucas), 855
Discrete-time systems (Jiang), 721
Dynamic stability improvement (Papadopoulos), 383
Dynamic system (El Naschie), 183
Dynamic systems (Liu), 491

E

Eigenfrequencies of rectangular cavities (Roumeliotis), 525
Electrical network (Wan), 441
Equations of motion (Udwadia), 571

Journal of the Franklin Institute
Vol. 330, No. 6, pp. 1237–1243, 1993
Pergamon Press Ltd. Printed in Great Britain

Excitation controllers of synchronous generators (Papadopoulos), 383
Extended bond graphs (Yen), 1113

F

Fast algorithm of CNN component detector (Wu), 1005
Filter design (Soltis), 635
Fin array (Chung), 869
Fin heat transfer (Sohrabpour), 37
Fin optimization (Sohrabpour), 37
Fins (Chung), 465
Flexible multibody dynamics (Yen), 1113
Frequency response (Lindquist), 315
Frequency sampling filters (Stubberud), 579
Fuzzy sets theory application (Sarna), 145

G

Gain plots (Kurfess), 213
Gaussian form (Chow), 1
Gear train (Hsu), 131
Gegenbauer- and Jacobi-like polynomials (Soltis), 635
General circuit theory (Zhu), 1051
Generalized divergence measures (Menéndez), 345
Global optimization (Rubio), 29
Graph theory (Hsu), 131, 913
Graph theory (Zhao), 369
Graphic and co-graphic bondgraphs (Birkett), 735
Graphite (Charlier), 259
Group theory (Charlier), 259

H

Heat engines (Senft), 967
Heat transfer (Yeh), 153
Hilbert's space-filling curve (Sagan), 763
Hybrid systems (Buisson), 1165

I

Information theory (Bell), 1101
Inner determinants (Premaratne), 165
Intelligent controller (Liu), 491
Intercalation compounds (Charlier), 259
Inverse LQ problem (Arar), 985

K

Kalman filter performance (Priemer), 333
Kalman filtering (Kumar), 929

L

Legendre polynomials (Razzaghi), 453
Linear multivariable systems (Krajewski), 431
Linear phase filtering (Stubberud), 579
Linear systems (Ansary), 677
Linear systems (Fortuna), 695
Linear time-invariant control (Kurfess), 213
Linear time-varying systems (Razzaghi), 453

M

Machine theory (Senft), 967
Mathematical modelling of empirical systems (Sarna), 145
Matrix fraction descriptions (Chen), 815
Matrix fraction descriptions (Tsai), 291
Mechanical efficiency (Senft), 967
Mechanical engineering (Yeh), 153
Model approximation (Fortuna), 695
Model conversion and digital redesign (Tsai), 1063
Model order reductions (Ansary), 677
Model reduction (Lucas), 855
Model reduction (Tao), 551
Modelling (Buisson), 1165
Multi-criteria decision-making (Payne), 1219
Multi-dimensional Cantor sets (El Naschie), 199
Multidimensional recursive digital filter (Muneyasu), 1087
Multidimensional signal processing (Mastorakis), 767
Multidimensional stochastic analysis (Mastorakis), 767
Multidimensional systems (Bose), 905
Multidimensional systems (Mastorakis), 767
Multirate systems (Yang), 1177

N

Near-optimal controller design (Wang), 651
Network analysis (Zhu), 1051
Network reliability (Colbourn), 629
Network theory (Lindquist), 315
Neural network techniques (Jang), 505
New graph model (Zhao), 369
Noise modeling (Au), 707
Non-circular chainwheel design (Han), 1195
Nonholonomic systems (Udwadia), 571
Nonlinear dynamical systems (Stensby), 775

Nonlinear system estimation (Krzyżak), 605
Nonparametric estimation (Krzyżak), 605
Nowhere differentiability (Sagan), 763

O

Optimal control (Rubio), 29
Optimal model reduction (Lucas), 79
Optimization (Chung), 869
Optimization theory (Payne), 1219
Orthogonal polynomial approach (Agrawal), 243
OTA-C sinusoidal oscillators (Bhaskar), 885

P

Padé approximation (Lucas), 79, 855
Parameter plane method (Yang), 1177
Partial differential equations (Rubio), 29
Pattern recognition (Hernanz), 229
Phase locked loops (Stensby), 775
Phased array (Soltis), 635
Phased arrays (Rhea), 413
PID control (Yang), 1177
Planetary gear trains (Hsu), 913
Pole placement (Arar), 985
Positive real systems (Jiang), 721
Power electronics (Wu), 1017
Probability density functions (Au), 707
Probability of error (Hernanz), 229
Probability of error (Menéndez), 345

R

Radar (Mahafza), 95
Radar beamforming (Mahafza), 103
Radar sidelobe cancellers (Rhea), 413
Radar signal processing (Mahafza), 95, 103
Radar signal processing (Rhea), 413
Radiation (Chung), 869
Radiative fin arrays (Chung), 465
Rational approximation (Krajewski), 431
Realization of matrix fraction descriptions (Chen), 815
Realizations of matrix transfer functions (Tsai), 291
Received pulse behavior (Samaddar), 17
Reception of single-cycle (Samaddar), 17
Rectangular resonant cavities (Roumeliotis), 525
Recursive kernel regression estimate (Krzyżak), 605
Reduced order models (Lucas), 79
Reliability polynomial (Colbourn), 629
Resultants (Bose), 905
Robust control (Shao), 281
Robust control system (Chen), 939
Robust stability analysis (Chen), 939
Roesser models (Trzaska), 479

S

Scattering matrix (Wan), 441
Schur–Cohn minors (Premaratne), 165
Seismic event analysis (Jang), 505
Seismic phase identification (Jang), 505
Sensitivity analysis (Agrawal), 243
Signal processing (Kumar), 929
Singular second order systems (Trzaska), 479
Sinusoidal oscillators (Bhaskar), 885
Spinning Timoshenko beams (Han), 113
Stability (Bose), 905
Stability (Brown), 665
Stability of discrete-time systems (Premaratne), 165
Stability margins (Tao), 551
State estimation (Priemer), 333
State feedback (Paraskevopoulos), 1135
Statistical mechanics (El Naschie), 199
Switched circuits (Wu), 1017
Switching system (Abadie), 685, 799
Synthetic aperture radar (Mahafza), 95
System identification (Joo), 995
System theory (Reza), 423
Systems and control engineering (Taiwo), 641

T

Time-varying systems (Paraskevopoulos), 1135
Timoshenko beams subjected to moving loads (Han), 113
Topological synthesis (Hsu), 131
Transfer matrix (Kamel), 787
Turbulence (El Naschie), 183

V

Vibration-based theory (Hu), 841

AUTHOR INDEX

Full titles are listed only under first authors: all co-authors are cross-referenced.

A

Abadie, V.: Elaboration of a control law for switching nonlinear systems, 685
Abadie, V.: Opened loop control of switching linear systems, 799
Agrawal, O. P.: A general orthogonal polynomial approach to the sensitivity analysis of linear systems, 243
Alexander, K. L.: See Han, R. P. S., 1195
Ansary, A.: A computationally attractive system model using a novel one-sided transformation, 677
Arar, A.-R. S.: Optimal pole placement with prescribed eigenvalues for continuous systems, 985
Arvanitis, K. G.: See Paraskevopoulos, P. N., 1135
Au, O. C.: On transformation noise: properties and modeling, 707
Audeh, N. F.: See Rhea, J. L., 413

B

Bandekas, D. V.: See Papadopoulos, D. P., 383
Bell, M. R.: On the commutativity of discrete memoryless channels in cascade, 1101
Bhaskar, D. R.: Systematic derivation of all possible canonic OTA-C sinusoidal oscillators, 885
Birkett, S. H.: On the special properties of graphic and co-graphic bond-graphs, 735
Bose, N. K.: Simplification of a multidimensional digital filter stability test, 905
Bose, T.: See Joo, K., 995
Brown, D. P.: On convergence and limit cycles in digital filters in integer number systems, 665
Buisson, J.: Analysis of switching devices with bond graphs, 1165

C

Chan, W.-M.: See Yen, C., 1113
Charlier, A.: Graphite intercalation compounds and symmetry—I. Simple group, 259
Charlier, M.-F.: Charlier, A., 259
Chen, H.: See Wu, X. Y., 1005
Chen, H.-G.: Stability-robustness analysis for linear systems with state-space models, 939
Chen, M.-S.: See Tsai, J. S. H., 51
Chen, W.-K.: See Wan, J.-L., 441
Chen, W.-K.: See Wu, X. Y., 1005, 1017
Chen, W.-K.: See Zhu, Y.-S., 1051
Chen, W. S.: Minimal order realization with a special coordinate for matrix fraction descriptions, 815
Chow, C. K.: On generation of elliptical distributions with Gaussian form covariance matrix, 1
Chung, B. T. F.: A novel design for a radiative fin array system, 465
Chung, B. T. F.: Optimum design for a radiative fin array system with least horizontal dimension, 869
Colbourn, C. J.: Reliability polynomials can cross twice, 629

D

Dauphin-Tanguy, G.: See Abadie, V., 685, 799
Dauphin-Tanguy, G.: See Kamel, A., 787
De Abreu-Garcia, J. A.: See Ansary, A., 677
Dowla, F.: See Jang, G.-S., 505

E

El Naschie, M. S.: On turbulence and complex dynamic in a four-dimensional peano-Hilbert space, 183
El Naschie, M. S.: Statistical mechanics of multidimensional Cantor sets, Gödel theorem and quantum spacetime, 199
Elnagar, G.: See Razzaghi, M., 453

F

Fikioris, J. G.: See Roumeliotis, J. A., 1235
Fortuna, L.: Closed-loop balanced realizations of LTI discrete-time systems, 695

H

Han, K.-W.: See Chen, H.-G., 939
Han, K. W.: See Tao, C. S., 551
Han, R. P. S.: Analytical dynamics of a spinning Timoshenko beam subjected to a moving load, 113
Han, R. P. S.: An optimum non-circular chainwheel design for a bicycle drive system, 1195
Harms, D. D.: See Colbourn, C. J., 629
Hernanz, M. L. V.: Information of degree β and probability of error, 229
Hinamoto, T.: See Muneyasu, M., 1087
Hnikich, D.: See Charlier, A., 259
Hsiao, F. B.: See Tao, C. S., 551
Hsu, C.-H.: A graph representation for the structural synthesis of geared kinematic chains, 131
Hsu, C.-H.: Synthesis of kinematic structure of planetary gear trains by admissible graph method, 913
Hu, J.: An integrated approach to detection of cracks using vibration characteristics, 841

J

Jang, G.-S.: A comparison of neural network performance for seismic phase identification, 505
Jiang, J.: Preservations of positive realness under discretizations, 721
Joo, K.: Identification of a class of signals imbedded in high measurement noise, 995
Jury, E. I.: See Premaratne, K., 165

K

Kalaba, R. E.: See Udwadia, F. E., 571
Kamel, A.: How to derive a bond graph model from a transfer matrix, 787
Kanellopoulos, J. D.: See Roumeliotis, J. A., 1235
Ko, E. J.: See Liu, T. I., 491
Kokkorakis, G. C.: See Roumeliotis, J. A., 525
Krajewski, W.: Optimality conditions in multivariable L_2 model reduction, 431
Krebs, V.: See Taiwo, O., 641
Krzyżak, A.: Identification of nonlinear block-oriented systems by the recursive kernel estimate, 605
Kumar, M. M.: Design and performance analysis of an adaptive FIR Kalman equalizer, 929
Kung, F.-C.: See Tsai, J. S. H., 51
Kurfess, T. R.: Foundations of classical control theory with reference to eigenvalue geometry, 213

L

Lee, J.: See Liu, T. I., 491
Leondes, C. T.: See Stubberud, P. A., 579
Lepschy, A.: See Krajewski, W., 431
Li, T.-H. S.: See Wang, M.-S., 651
Liang, R. Y.: See Hu, J., 841
Liaw, S. P.: See Yeh, R. H., 153
Lin, C.-M.: Synthesis of deadbeat controllers with minimum control input and finite-step control input, 401
Lindquist, C. S.: Bode plot construction for real-valued rational functions, 315
Liu, C.: See Wu, X.-Y., 1017
Liu, T. I.: Intelligent control of dynamic systems, 491
Lucas, T. N.: Optimal model reduction by multipoint Padé approximation, 79
Lucas, T. N.: Optimal discrete model reduction by multipoint Padé approximation, 855

M

Mahafza, B. R.: Two-dimensional SAR imaging using linear arrays with transverse motion, 95
Mahafza, B. R.: Synthetic sampled aperture radar (SSAMAR) beamforming, 103
Mahafza, B. R.: See Rhea, J. L., 413
Marszalek, W.: See Trzaska, Z., 479
Masada, G. Y.: See Yen, C., 1113
Mastorakis, N. E.: Stochastic analysis of systems described by the Roesser model, 767
Mayeda, W.: See Zhao, H.-A., 369
Menéndez, M. L.: Generalized divergence measures and the probability of error, 345
Mian, G. A.: See Krajewski, W., 431
Muneyasu, M.: Analytical design of multidimensional recursive digital filters with cubic symmetry and constant group delays, 1087
Muscato, G.: See Fortuna, L., 695
Myrvold, W. J.: See Colbourn, C. J., 629

N

Nagurka, M. L.: See Kurfess, T. R., 213
Nunnari, G.: See Fortuna, L., 695

P

Papadopoulos, D. P.: Design of robust excitation controllers for synchronous generators using the spectral and control-canonical-form methods with output feedback, 383
Paraskevopoulos, P. N.: State feedback uniform decoupling problem of linear time-varying analytic systems, 1135
Pardo, L.: See Menéndez, M. L., 345
Payne, A. N.: Efficient approximate representation of bi-objective tradeoff sets, 1219
Pietila, R. G. Jr: See Yang, J.-S., 1177
Premaratne, K.: On the Bistritz tabular form and its relationship with the Schur–Cohn minors and inner determinants, 165
Priemer, R.: Some new errors for assessing Kalman filter performance, 333

R

Raemer, H. R.: See Chow, C. K., 1
Rahrooh, A.: See Kumar, M. M., 929
Razani, A.: See Sohrabpour, S., 37
Razzaghi, M.: A Legendre technique for solving time-varying linear quadratic optimal control problems, 453
Reza, F. M.: Generation of complex reactance functions, 423
Rhea, J. L.: Radar interference cancellation using sequential mode operation (ICSEQ), 413
Rhea, J. L.: See Mahafza, B. R., 103
Roumeliotis, J. A.: Eigenfrequencies of an electromagnetic rectangular cavity with an inner small sphere, 525
Roumeliotis, J. A.: Corrigendum, 1235
Rubio, J. E.: The global control of nonlinear elliptic equations, 29

S

Sagan, H.: An analytic proof of the nowhere differentiability of Hilbert's space-filling curve, 763
Samaddar, S. N.: Behavior of a received pulse radiated by half-wave dipole excited by a single-cycle sinusoidal voltage, 17
Sarna, M.: Evaluation of the adequacy of relational empirical systems—II, 145
Sawan, M. E.: See Arar, A.-R. S., 985
Sawan, M. E.: See Shao, Z. H., 281
Senani, R.: See Bhaskar, D. R., 885
Senft, J. R.: General analysis of the mechanical efficiency of reciprocating heat engines, 967
Shao, Z. H.: Robust stability of systems with multi-structured uncertainties, 281
Shieh, L. S.: See Tsai, J. S.-H., 1063
Smith, J. R.: See Papadopoulos, D. P., 383
Sohrabpour, S.: Optimization of convective fin with temperature-dependent thermal parameters, 37
Soltis, J. J.: New Gegenbauer-like and Jacobi-like polynomials with applications, 635
Stensby, J.: Saddle node bifurcation at a non-hyperbolic limit cycle in a phase locked loop, 775
Stubberud, P. A.: An optimization approach to the design of frequency sampling filters implemented with finite word length architectures, 579
Sueur, C.: See Kamel, A., 787
Sun, Y.-Y.: See Wang, M.-S., 651

T

Taiwo, O.: Generalized moment method for the order reduction of multivariable systems, 641
Tan, W.: See Wu, X. Y., 1005
Taneja, I. J.: See Menéndez, M. L., 345
Tao, C. S.: Stability margins and model reduction, 551
Theodorou, N. J.: See Mastorakis, N. E., 767
Thomas, J. B.: See Au, O. C., 707
Thompson, P. A.: See Mahafza, B. R., 103
Tripathi, M. P.: See Bhaskar, D. R., 885
Trzaska, Z.: Inversion of matrix pencils for generalized systems, 479
Tsai, J. S. H.: An alternative digital redesign of continuous-time suboptimal regulators for input time-delay systems, 51
Tsai, J. S. H.: Implementation of column-pseudo-proper right matrix fraction descriptions with cascaded or parallel active RC networks, 291
Tsai, J. S.-H.: Model conversion digital redesign of singular systems, 1063
Tsai, J. S. H.: See Chen, W. S., 815
Tu, M.-H.: See Lin, C.-M., 401

U

Udwadia, F. E.: On motion, 571

V

Vemuri, V.: See Jang, G.-S., 505
Viaro, U.: See Krajewski, W., 431

W

Wan, J.-L.: On consistency of the complex nor-

malized scattering matrices of multi-port networks, 441
Wang, C. T.: See Tsai, J. S. H., 291
Wang, C.-T.: See Tsai, J. S.-H., 1063
Wang, M.-S.: Near-optimal observer-based control of discrete two-time-scale systems, 651
Wu, X.-Y.: The improvement of the hardware design of artificial CNN and a fast algorithm of CNN component detector, 1005
Wu, X.-Y.: A unified method for fast modelling of DC–DC switching converters, 1017

Y

Yang, J.-S.: Parameter plane control design for a stirred-tank chemical system with slow–fast multirate sampling, 1177
Yeh, R. H.: Optimum configuration of a fin for boiling heat transfer, 153
Yen, C.: Dynamic analysis of a two-link flexible manipulator system using extended bond graphs, 1113
Yurtseven, M. K.: See Kumar, M. M., 929

Z

Zhang, B. X.: See Chung, B. T. F., 465
Zhang, B. X.: See Chung, B. T. F., 869
Zhao, H.-A.: Some problems between a W-graph and its derived graphs, 369
Zhu, Y.-S.: A useful identity in circuit theory, 1051
Zu, J. W.-Z.: See Han, R. P. S., 113